Operating Instructions
MAGSTOP Barrier
MIB 20/30/40
MLC Controller Unit

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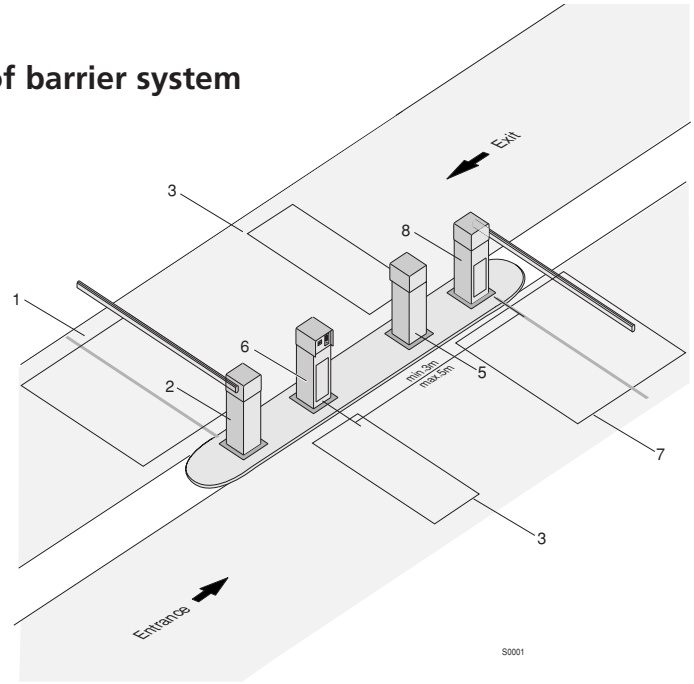
1. Overview

1.1 Example layout of barrier system

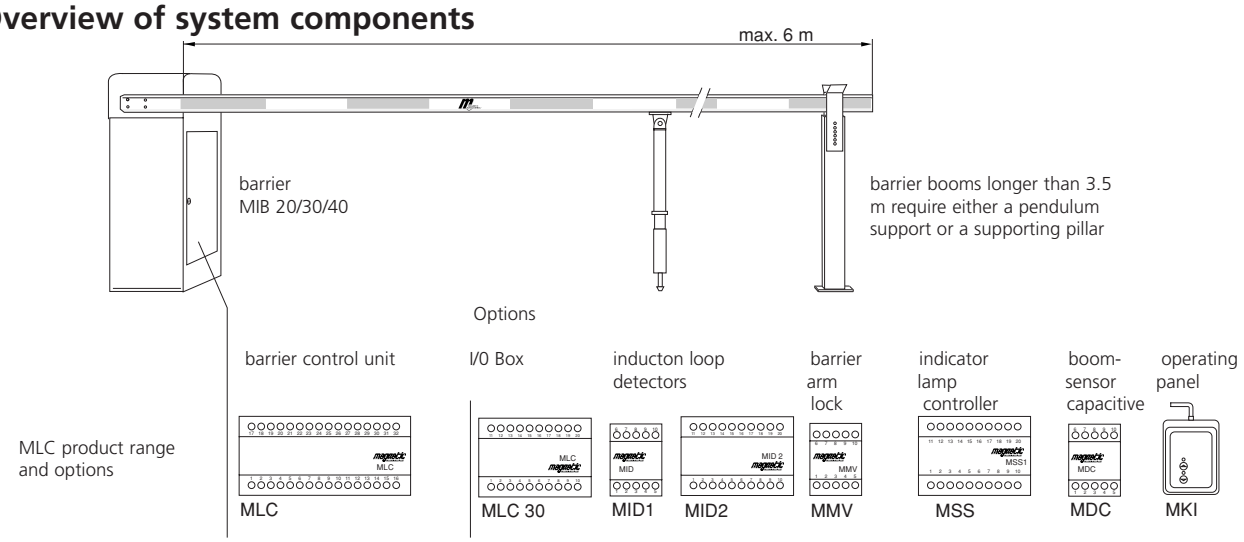


The illustration of the induction control loops in this figure is symbolic only. The loop geometry must be defined by the expert. (See also Chapter 3.3 Laying loops p. 11)

Abb. S0001
Layout of barrier system

1,7 safety loop
2,8 Magstop barrier (control unit in pillar)
3 opening or presence loop
5,6 MEC control pillar with plug-in module (e.g. for access control)

1.2 Overview of system components



MEC control pillar

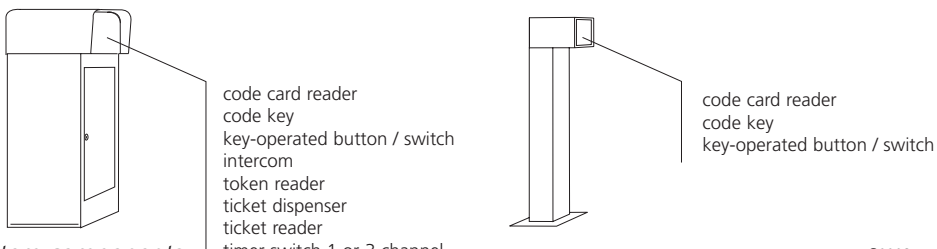


Abb. S0002
Overview of system components

2. Safety

2.1 General safety information

This MAGSTOP barrier system has been designed, built and tested using state-of-the-art technology and will have left our factory only after having satisfied stringent safety and reliability criteria. Nevertheless the barrier system can represent a risk to persons and property if it is not operated correctly. These operating instructions must therefore be read in their entirety and all safety information contained therein must be complied with.
The manufacturer shall refuse to accept liability and shall withdraw warranty cover if this barrier system is used incorrectly or is used for a purpose for which it was not intended.
Operating instructions, circuit documents and accompanying information must be stored so that they can be referred to at any time, preferably in the barrier.
The manufacturer cannot predict every source of danger that can occur during operation of the barrier. The owner/operator must always ensure that at no time during operation danger can arise for people or objects.
If the barrier is damaged or has defects which could impair safety, the facility must be shutdown. Modifications and changes to the barrier or the control units are only permitted according to the MAGNETIC standard.
.

CAUTION!
The standards and regulations applicable at the place of installation must always be complied with.

2.2 Intended use

The barriers are intended for pure vehicle traffic.
Use with pedestrians, bicycles and mopeds is explicitly not permitted.
If used with motorbikes the prerequisites for safe operation must be created. To this end the induction loops must be designed accordingly.
Any other use is not permitted.
The MAGSTOP MIB 20 barrier may only be used for tollbooth applications on motorways and major roads.
The MAGSTOP MIB 30/40 barriers are designed for use in controlling the entrance and exit lanes of car parks areas, multi-storey car parks and other vehicular access routes.
The MAGTRONIC control units have been especially designed for controlling Magnetic barriers.
It is not permitted to use these barrier systems for any other purpose.
Modifications or changes to the barrier or its control modules are prohibited.
Only original Magnetic spare parts and accessories may be used.
In the event of improper and non-intended use the manufacturer will reject all liability and warranty.

2.3 Safety symbols used in this handbook

The following symbols are used in these operating instructions to indicate potential risks and other safety information.

Warning!

This symbol is used in this manual to indicate those actions or conditions which represent a potential danger to life and limb. Please read these instructions very carefully.

Caution!

This symbol is used in this manual to indicate those actions or conditions which represent a potential hazard to property and equipment. Please read these instructions very carefully.

Note!

This symbol is used in this manual to indicate useful information for the operator.

2.4 Occupational and operating safety

A1 The assembly and installation instructions must be complied with in their entirety. Any alterations must have received prior confirmation from Magnetic Autocontrol GmbH.
A2 Disconnect all external opening or closing devises to prevent unintentional movement of the barrier during service or maintenance work.
A3 Removing the front door and/or housing lid exposes powered electrical equipment, tensioned springs, and lever system that can cause bodily harm if not handled correctly.
A4 The motor surface temperature can exceed 80 °C, touching the motor can cause skin burns.
A5 The gate arm may only be installed during calm, wind-free conditions and by at least two people.
A6 Ensure that the workspace around the barrier is wide enough and that the installer has a safe ground to stand on.
A7 Pay attention to overhead power lines during the attachment or detachment of the gate arm.
A8 It is prohibited to install the barrier without proper mounting to the foundation.
A9 Before initial commissioning all electrical components including the external and internal wiring must be tested in accordance with the local electrical code.
A10 Only certified and trained electrical technicians may perform any electrical connections, wiring work or exchange of components.
A11 Before installing or maintaining the equipment the main power must be disconnected.

B1 The electrical wiring of the barrier must comply with the included drawings. Main power to the barrier must be tested in accordance to local electrical code.
B2 Do not start the initial commissioning unless all safety equipment is installed and tested.
B3 A safe clearance distance of at least 2 ft (24 inch) must be provided between the tip of the barrier boom and the closest solid obstacle (building, wall, fence etc.).
B4 Any activity in the entrance and exit lanes should be monitored to ensure a safe operation when opening or closing the barrier gates or to prevent altering or vandalism to the equipment from unauthorized persons.
B5 The motion of the barrier boom must be directly observable by the person operating the barrier.
B6 Barrier booms longer than 3.5 m require either a pendulum support or a supporting pillar.

B7 The gate arm attachment kit is designed to withstand wind speeds up to 10 Beaufort (= 500N/qm). Contact Magnetic if stronger winds are expected.
B8 During intentional or unintentional loss of power make sure to mechanically secure the barrier in its up position or remove the gate arm. If left in the up position without power the arm can go down on its own (e.g. high wind gusts).
B9 It is prohibited to perform any technical modification to the barrier.
B10 It is not permitted to make any technical changes to the barrier.

2.5 Pedestrian safety

- While the barrier boom is in motion no pedestrian and no vehicle shall be in the immediate vicinity of the barrier.
- It is imperative to have pedestrian sidewalks be parallel to entrance and exit lanes or to have pedestrian walkways on the opposite sides of the facility away of vehicle traffic. It is also necessary to enforce that pedestrian are using those walkways and do not enter or leave the parking facility on vehicle traffic lanes.
- The barrier must be installed and operated in compliance with the details in the installation and operating instructions and the health and safety guidelines and regulations applicable at the place of installation. This particularly applies to the laying of the induction control loop in order to ensure proper functioning of the system.

- The opening and closing movements must be observed and monitored. Operation of the barrier without visual control and safety is not permitted.
- An explicit reminder is given that the barriers may normally only be used for vehicle traffic. Pedestrians and cyclists may only pass through the barrier if appropriate safety is ensured, so that no danger to people or objects can arise at any time. In all other cases the owner/operator must take suitable measures to ensure strict separation of vehicle and other traffic.
- To this end the pictograms included in the scope of supply (pedestrian, bicycle and if applicable motorbike too) must be attached directly to the barrier arm. This is the only way for third parties to recognise that the barrier is not suitable for through traffic. (WARNING TRIANGLE)

- Structural partitions such as footpaths next to the carriageway must be provided with warnings and appropriate additional signage.

2.6 Technical developments

The manufacturer reserves the right to modify, without prior notice, the technical specifications in order to accommodate the latest technical developments. Magnetic is willing to provide information on the status of existing operating instructions and on any alterations and extensions that may be relevant.

2.6 Warranty

Magnetic provides a warranty on its barriers that covers all mechanical and electrical components, but excludes specific parts, subject to wear, for a period of two years from the date of first use or for a maximum of three years from the date on which the system was delivered, provided that the operating instructions have been complied with, no unauthorized servicing of machine components has taken place, and that no mechanical damage to the machines is evident.

3. Assembly and installation

3.1 Constructing the foundation for the MIB barrier and the MEC-10 N/H/L control pillar

To ensure that the units are stable under all operating conditions, a foundation with the following dimensions must be provided:
Depth of foundation: at least 800 mm (frost-free)
Base area of foundation: 500 x 600 mm
The base of the foundation is 100 mm greater, towards the vehicle passage side, than in other sections of the foundation (see Fig. S0101).

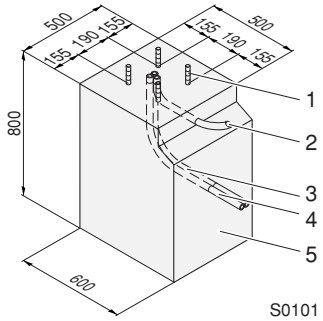


Abb. S0101
View of the foundation, all dimensions are in mm

1 masonry anchor (four in total)
2 empty conduit for induction loop connections, dia. 29 mm
3 empty conduit for power supply cable, dia. 29 mm
4 empty conduit for control cables, dia. 29 mm
5 concrete foundation (BH PC 250, strength = 25 N/mm²)

Empty conduits, each with a diameter of 29 mm, must be installed to accomodate the mains supply cable, the control cables, and possibly the induction loop feeders (barrier: 2 or 3 empty conduits; control pillar: 2 empty conduits).
A steel reinforcing cage is absolutely essential for the stability of the concrete foundation (see Fig. S0102).

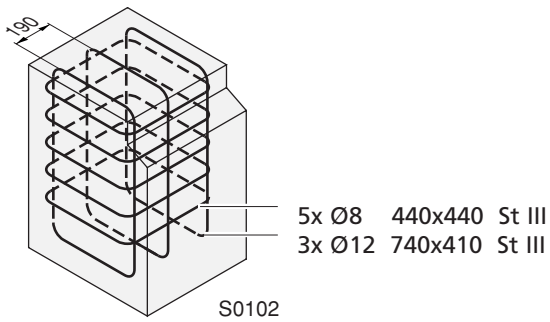


Abb. S0102
Steel reinforcing cage for the concrete foundation

The foundation hole is filled with BH PC 250 grade concrete (strength: 25 N/m²). The plinth face must be carefully smoothed so that the barrier housing can be positioned in a **level and horizontal** manner. **The surface difference must not exceed 1 mm.**
Once the concrete is adequately set, the holes for the anchor bolts can be drilled into the face of the plinth in accordance with the dimensions shown in Fig. S0101.
Distance between drill holes: 190 mm (arranged in a square, see Fig. S0101)
Hole diameter: 10 mm
Depth of hole: 80 mm
Once the holes have been drilled, the four M8 x 160 anchor bolts can be set in place.

3.2 Loop geometry

The following points must always be noted and taken into account when dimensioning and arranging loops.

Induction control loops only respond to metal.
No proper function in response to people or objects with low metal fractions. (e.g. bicycle).

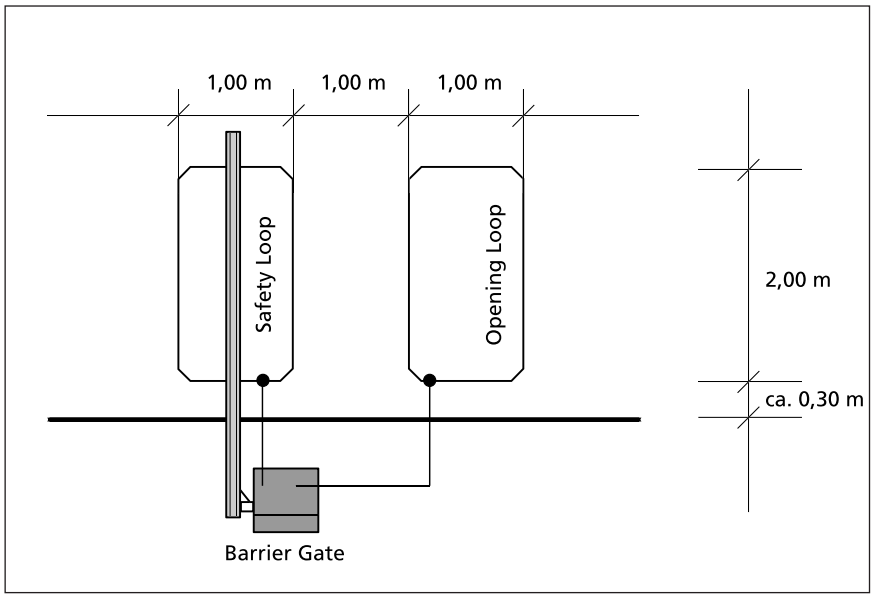
Safety loops
The type of vehicles to pass through the barrier must be taken into account. (See examples)

Safety loops must secure the danger zone below the barrier arm, over the whole length.

Important for bicycles and motorbikes!
If correctly dimensioned, induction control loops can also be used to recognise two-wheelers. However, they are inadequate as a safety device.
Particular dimensions and geometries must be complied with to recognise two-wheelers.
(See the following examples)

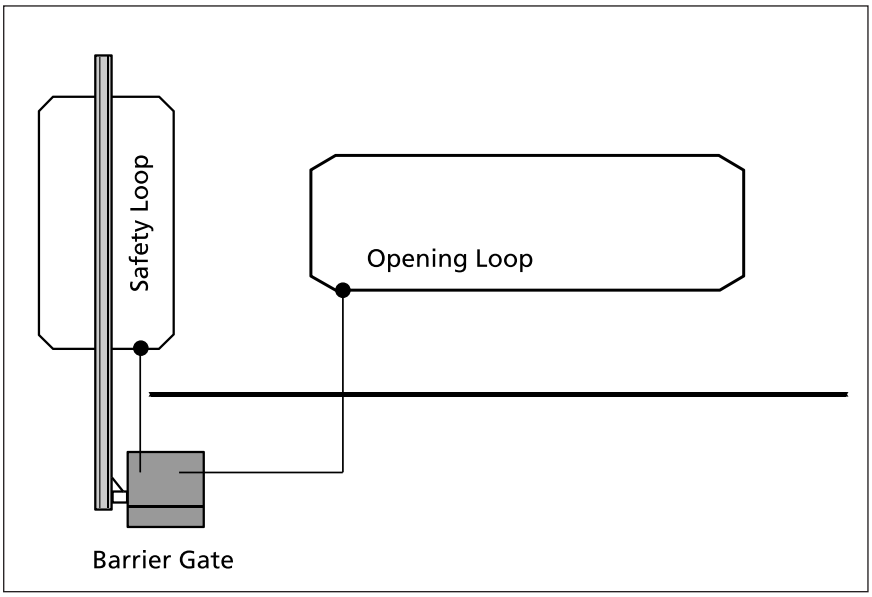
Opening loops
Opening loops must be laid directly in front of the safety loop. The maximum distance between the safety loop and opening loop must not exceed 1.00 m.

Normal car use



Normal car use
Maximum distance between opening and safety loop 1.00 m.

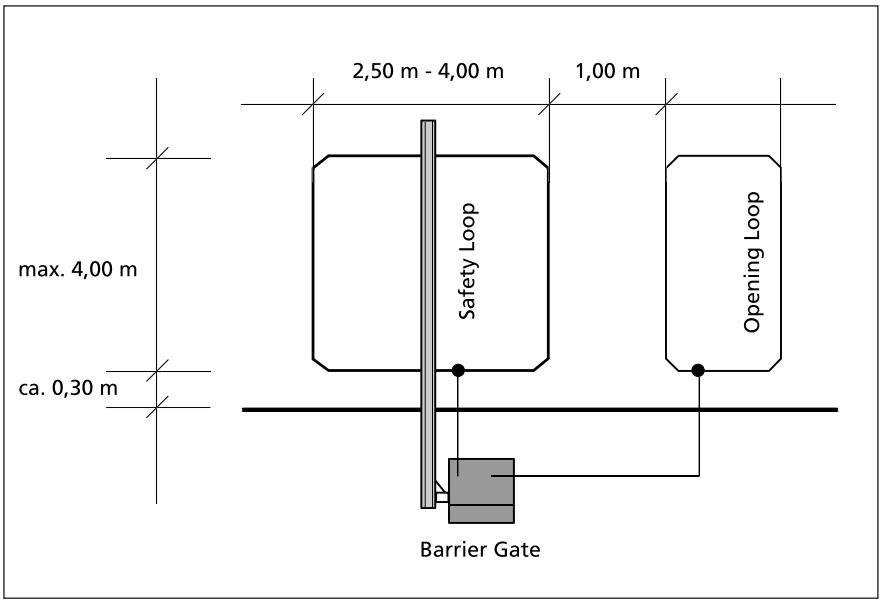
Car loops (access with long opening loop)



Car access with long opening loop, so that vehicles can pass through without stopping.

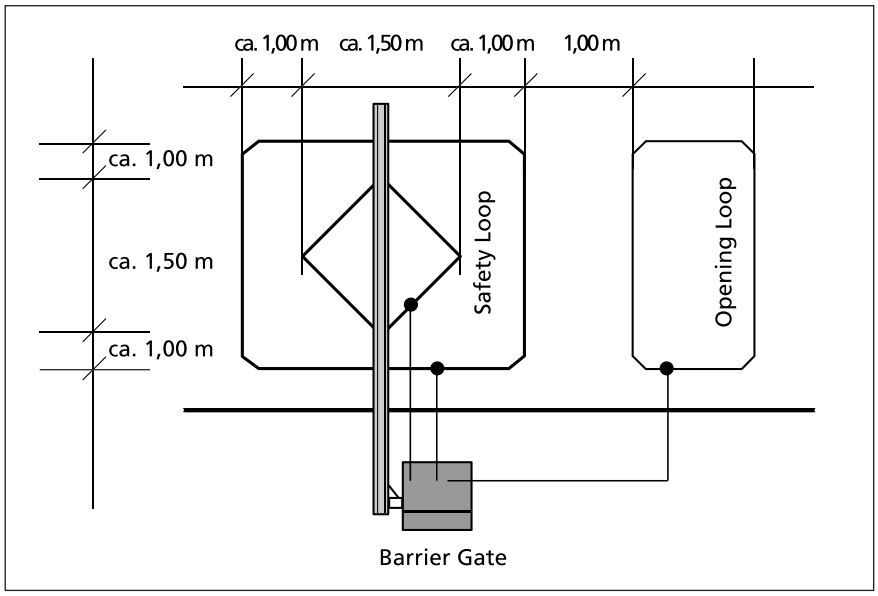
Truck loops

IMPORTANT!
At accesses passed through by trucks the safety loop must be at least 2.5 m long in the direction of travel.



Truck loops

Trucks - Car - loops



Truck & car loops

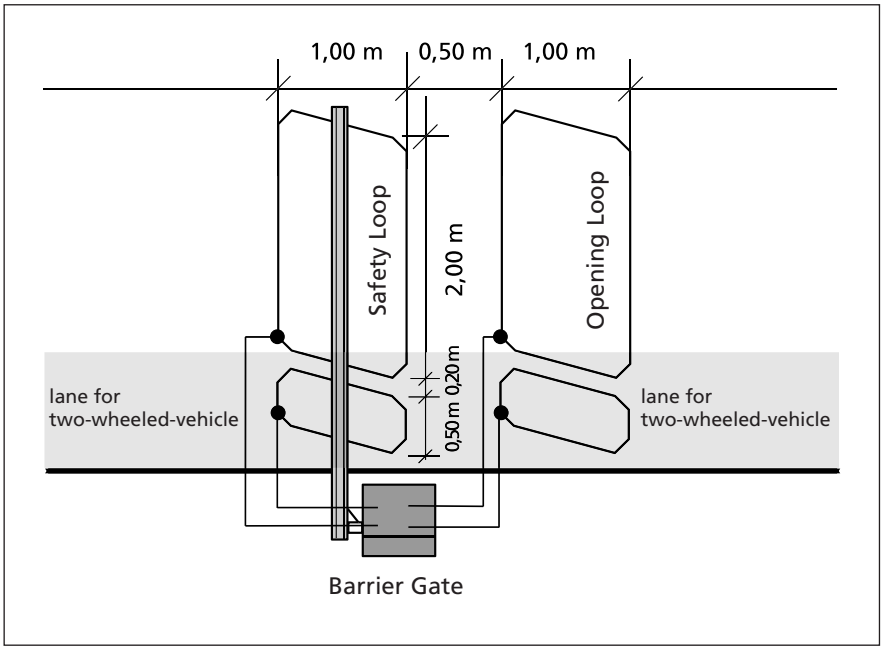
IMPORTANT!
Winding direction outside = inner loop!
The winding direction is the same if the sensitivity in the middle between the outer and inner loop is a maximum!

If necessary, the outer and inner loop can be connected together to one detector channel. Whether this is done with connection in series or in parallel depends on the total inductance.
Therefore, lay both supply conductors in the barrier.

For series connection: **L total = L1 + L2**

For parallel connection: $$\textbf{L total} = \frac{\textbf{L1 x L2}}{\textbf{L1 + L2}}$$

Car loops (access with two-wheel track)



Car access with two-wheel track

IMPORTANT!

Loops are inadequate safety devices for two-wheelers!
Two-wheel track must be clearly marked!
Number of turns per unit length of the two-wheel loops: 6!
Winding direction of car and two-wheel loop must be the same!

3.3 Installing the induction loops

The following section describes the standard installation of an induction loop. The basic function of loop A is as a safety and closing loop i.e. the barrier remains open for as long as a vehicle is above the loop. The barrier closes automatically only after the vehicle has moved away from the loop. The safety loop function can be switched off at the MLC controller unit. See Section 8.2 for the relevant controller settings.
Non-standard installations will require prior consultation with Magnetic. The standard installation is illustrated in Fig. S0103.

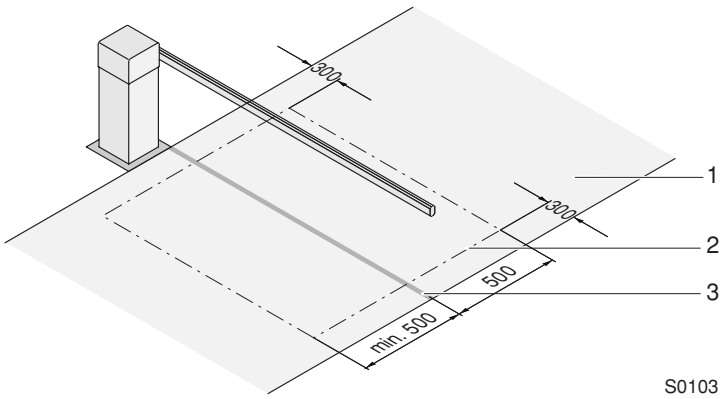


Abb. S0103
The illustration of the induction loops in this Fig. is symbolic only. For more detailed information, please see Chapter 3.3 "Laying induction loops".

1 access lane
2 induction loop
3 Projection of the barrier boom over the surface of the lane, assuming standard loop installation

The following points must be considered when installing the induction loop:

- The loop must be positioned so that it is symmetrical in relationship to the vertical plane of the barrier boom. It must be taken into account that the barrier boom arm is biased to one side of the barrier housing!
- The loops must be laid mirror-symmetrical with the barrier arm. It must be ensured that the barrier arm is fixed to the side of the housing!
- The safety loop must be laid so that the monitored area in front of and after the barrier is at least 500 mm. For truck traffic the loop must be designed to be larger. (See Chapter on Loop geometry 3.2)
- The distance between the induction control loop and the edge of the carriageway should be approx. 300 mm.
- Opening loops must be laid directly in front of the safety loop. The maximum distance between the opening loop and safety loop must not exceed 1 m. It must be ensured that when a vehicle passes through, irrespective of its direction of travel, the first loop is still assigned when the second loop is.
- The loops must be laid so that their position does not change during vehicle operation. Rough unstable pavements, loose Blockwork paving, gravelled paths, etc. are not suitable for the use of induction control loops. All geometrical changes to the loops are analysed by the controls as faults.

Warning!
When using an angle grinder, please follow the manufacturer's safety instructions!

- If the carriageway contains steel reinforcement, ramp heating, etc. the induction control loops should be laid at a minimum distance of 50 mm from them. Metals near the induction control loop impair the responsiveness.
- IMPORTANT! Avoid direct contact between induction control loops and reinforcement or ramp heating.
- Induction control loops must be laid at an adequate distance from sliding gates, roller shutters, etc.
- The supply conductor to the loop must not be longer than 15 m.
- The loop supply conductor must be shortened to the suitable length. It must never be rolled up in the barrier housing.
- The supply conductor must be twisted up to directly in front of the terminals of the loop detector with approx. 20 twists per meter.
- After the loop has been laid the volume resistivity and insulation resistance must be measured. The volume resistivity should be approx. 0.8 - 2.0 Ω. The insulation resistance against earth must be > 1MΩ. The inductance of the loop must be between 70 - 500µH.

CAUTION!
Loops may not be laid directly on the steel reinforcement or ramp heating.

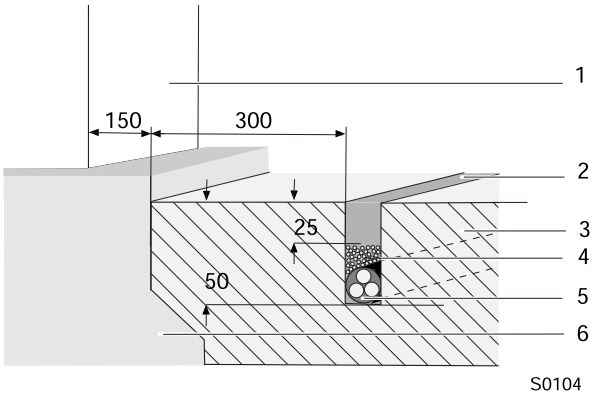
Procedure for installing an induction loop in bitumen, asphalt or concrete:

- Induction loops are available from Magnetic as ready-to-install cables (type: KAS 1-KAS 5) and can be supplied in a range of lengths.

- Alternatively, a loop can be manufactured from a single "multi-strand" wire with a 0.75 - 1.5 mm² cross-section. The inductance of the loop must lie between 70 and 500 µH, which is usually achieved by producing three to six windings in the coil.

- A 50 mm deep groove is cut in the surfacing or asphalt using a cutting disc (Fig. S0104). The groove must be uniformly deep. The corners of the groove must be cut at 45°.

- The loop cable must be carefully laid in the grove and uniformly pressed down with a blunt object (wooden spreader, plastic spreader). The cable can be fixed with small wooden wedges, which must be removed later.



1 barrier housing *2 cut out with sealing compound* *3 loop cable*
4 fine sand *5 Loop wires* *6 foundation*

Caution!
The loop cable insulation must not be damaged during installation!

The loop cable must be completely covered with sealing compound!

Abb. S0104
Installing an induction loop in asphalt

- The loop inserted in this way should be covered with quartz sand. Ensure at least 25 mm remain between the surface of the carriageway and the quartz sand for the grouting compound.

- The end of the cable must now be pushed through the empty conduit pipe.

- The groove must then be sealed with a grouting compound. The temperature of the grouting (sealing) compound in contact with the loop cable must not exceed 100 °C. If hot grouting compounds are used (bitumen or similar), appropriate temperature resistant loop cables/cores are to be used.
- If hot grouting compounds are used (bitumen or similar) temperature resistant cables must be used.

Procedure for installing an induction loop under interlocking paving stones:

- When installing an induction cable beneath paving stones, a ready-to-install cable (type: KAS 1-KAS 5) from Magnetic must be used.

- The induction loop cable must be laid in sand in such a way that its length is unchanged and it suffers no damage when vehicles are passing the barrier. The loop may not be laid in gravel or grit/chippings due to the risk of damage to the insulation.

- A minimum distance of 30 mm between the induction loop cable and the paving stones is required (see Fig. S0105).

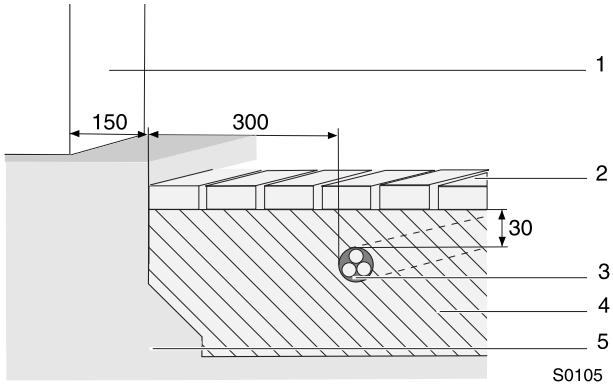
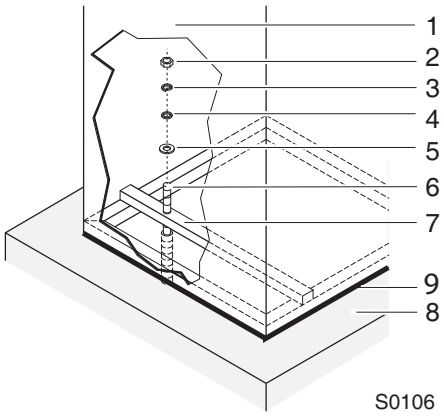


Abb. S0105:
Installing an induction loop under paving stones

1 barrier housing *2 paving stones* *3 loop cable*
4 sand bed *5 concrete foundation*

3.4 Assembling the housing

The barrier housing is positioned vertically on the upper face of the foundation and secured using the fastenings from assembly set "A" that is supplied with the system. (See Fig. S0106). In order to be able to adjust the housing later, the nuts are only lightly tightened initially. When the installation has been completed the barrier housing must be sealed with a silicone joint.



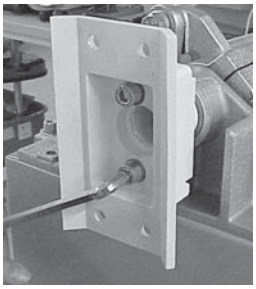
Abb,S0106
Fastening the barrier housing to the foundation

1 barrier housing *2 nut* *3 split washer*
4 plain washer *5 plain washer* *6 masonry anchor*
7 U-section *8 concrete foundation* *9 Silicone joint*

3.5 Installing the flange and the barrier boom arm

As shown in Fig. F0101, the flange is fastened to the drive shaft using two M10 x 25 hexagon socket screws.

The barrier boom arm is fastened to the flange as shown in Fig. F0102 using the fastenings from assembly set "B" that are supplied with the system.



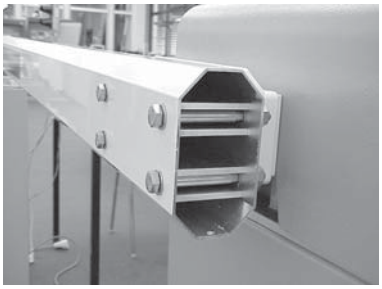


Abb.F0101
Flange mounted on the drive shaft
Abb.F0102
Barrier boom mounted on the flange (without cover)

The barrier boom can be fastened using plastic nuts if configured with a boom ejection contact and if the boom is designed to function as the breakaway component. (Note: this only applies to MIB barriers up to a maximum boom length of 3 m). When fastening the barrier boom using plastic nuts, the split washer shown in Fig. F0102 is not necessary. Due to age deterioration (UV radiation), the plastic nuts must be replaced annually.

3.6 Basic mechanical settings

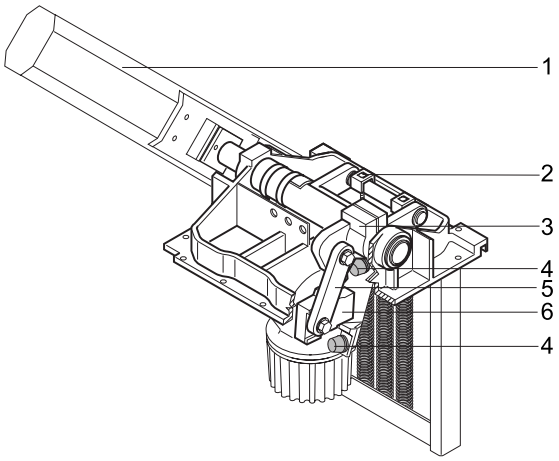


Abb. S0225
Drive unit

1 barrier boom arm
2 adjustment screw to set spring tension, with safety clips
3 clamping lever for flanged shaft
4 rubber buffer
5 connector piece
6 clamping lever for motor

Warning!
When tensioned, the springs and the barrier boom exert considerable forces on the drive unit and there is this a potential risk of injury.
Any work on the BDU drive unit must therefore be carried out only when the springs are not under tension and when the barrier boom has been secured or removed!

3.7 Setting and readjustment of the springs

The barrier is set up in the factory for the particular boom arm supplied.
This setting should however be checked after the barrier arm has been installed and before the barrier is operated for the first time.

The barrier is functioning correctly if the weight of the arm is balanced by the tensile force exerted by the springs. Any changes to the boom must therefore always be followed by readjustment of the springs.

Testing the spring settings:
The test of the spring settings should be carried out with a warmed up motor.
1. Open the barrier door, swing out the mounting plate, unlock the cover and remove it.
2. Disconnect the power supply plug.
3. Move the boom arm manually to the 45° position and then let go. If the boom remains stationary in this position, the springs are correctly adjusted.

Readjusting the spring settings:
1. Remove the two safety clips from both spring adjustment screws. Tighten or loosen the screws on the left and the right uniformly until the barrier arm remains stationary in the 45° position.
2. Replace the screw retainers (safety clips).

Exception:
When the barrier is set to open automatically in the event of a power cut failure, the spring tension needs to be greater than that described above. (Only possible for barrier boom up to 3.5 m in length).
Please note that if the barrier has been specially set at the factory to open in this way, the barrier arm is not locked when in its horizontal end position!

3.8 Readjusting the position of the barrier boom arm

To readjust the position of the barrier boom arm (for example, after excessive force has been applied), proceed as follows:

1. Open the barrier door, swing out the mounting plate, unlock the cover and remove it.
2. Raise the boom arm by pressing the black button.
3. Turn the rotary selector switch (2, Fig. S0227 Page 20) on the front panel of the MLC controller unit to position '1'.
4. Loosen the two clamping screws on the clamping lever of the flanged shaft just enough so that the arm is held safely in position whilst still allowing it to be repositioned by hand.
5. Readjust the position of the barrier boom arm (vertical position).
6. Retighten the clamping screws using a torque wrench (72 Nm).
7. Turn the selector switch (2, Fig. S0227 Page 20) on the MLC controller unit back to position '0'.

4. Power supply connection

Abb.F0103

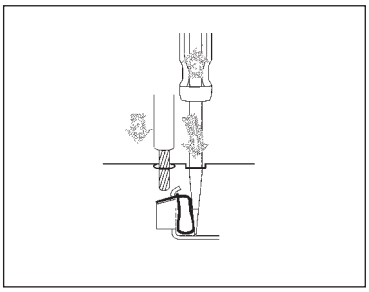


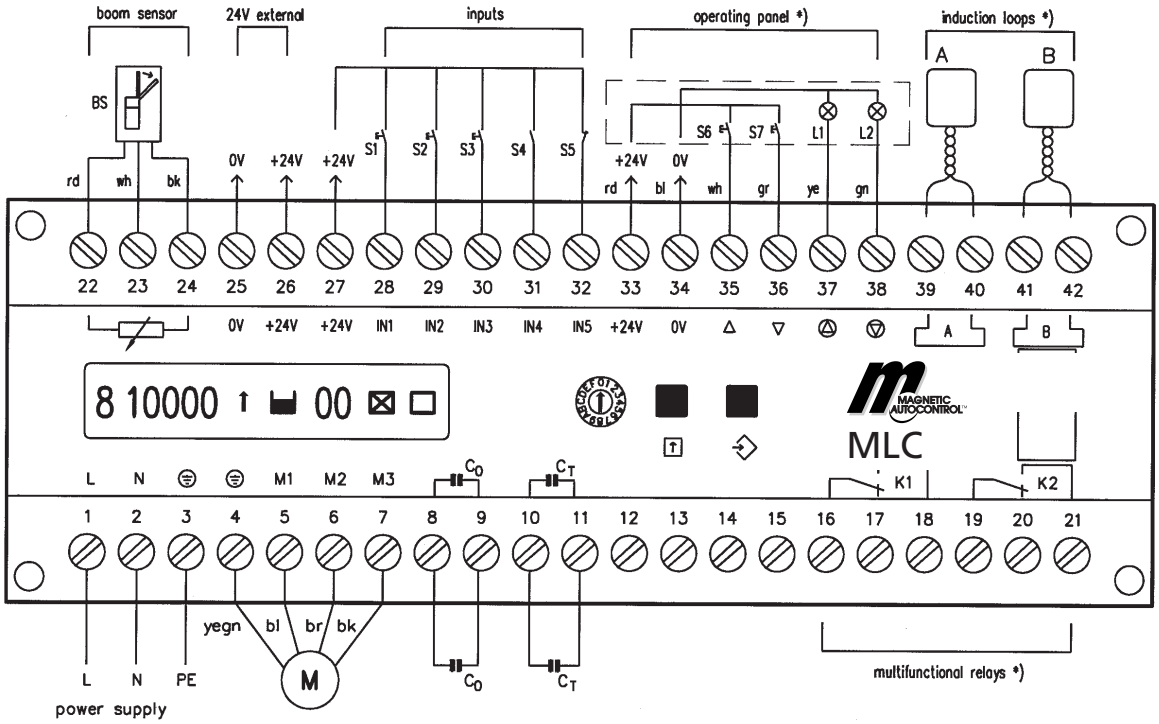
Abb.F0103
Power supply connection

Important! The terminals for the power supply are located on the connection plate in the side of the barrier housing. The mains voltage may only be supplied to the control unit with the prepared connection cable and mains plug.
Never connect the supply lead directly to the control unit!

5. MLC controller

Warning!
The following description in based on the standard parameter S 20000.
Other parameters sets are not completely considered in this description.

The MLC controller unit (**M**agnetic **L**ane **C**ontroller) has been specially designed for use with MIB 20/30/40 barrier gates.
Most barrier system configurations can be achieved using the standard version of the controller.
The position of the barrier boom is continuously detected by a sensor. This replaces the limit switches that are used in conventional barrier control systems. The combination of the sensor and the MLC unit guarantees the best possible control of the boom arm movement.
The controller can be expanded by the use of an I/O box (MLC 30) which offers a number of additional functions.
Software modifications are normally introduced at the factory but they can also be loaded very easily into the control unit at some later date by connecting a software memory card via the interface connector.
The barrier is correctly wired at the factory and is supplied ready for immediate connection.
Electrical connections that need to be made during installation are illustrated in Fig. S0226.


boom sensor
24V external
inputs
operating panel *)
induction loops *)
BS
rd wh bk
0V +24V +24V S1 S2 S3 S4 S5
+24V 0V S6 S7 L1 L2
rd bl wh gr ye gn
A B
22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42
0V +24V +24V IN1 IN2 IN3 IN4 IN5 +24V 0V
8 10000 00
MLC
L N M1 M2 M3 CO CT K1 K2
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
yegn bl br bk
L N PE M
CO CT
multifunctional relays *)
power supply
AC100V...240V
50 / 60 Hz

	230V/50Hz		115V/60Hz	
	C_O	C_T	C_O	C_T
MIB20	10µF	6µF	20µF	16µF
MIB30	3µF	3µF	10µF	8µF
MIB40	3µF	3µF	10µF	8µF

BS boom sensor
S1 open1 *)
S2 open2 (overriding) *)
S3 close *)
S4 external opening loop ②
S5 external safety device ②
S6 open/operating panel *)
S7 close/operating panel *)

L1 display open/operating panel *)
L2 display close/operating panel *)
A loop A *)
B loop B *)
M motor connections
C_O operating capacitor
C_T torque capacitor
K1 multifunctional relay1 *) (currentless)
K2 multifunctional relay2 *) (currentless)

*) function as per adjusted mode, see operating instructions.

Abb.S0226

Abb.S0226
Electrical connections

Note!
If special functions are included, the connections may differ from those shown here.
Please refer to the enclosed additional wiring scheme.

5.1 Command generators: their connection and function in the different operating modes

Important note: The information provided here is based on the standard program S20000. Differences may exist to other standard programs or customized versions. These programs are documented accordingly. All command generators (e.g. push buttons, light barriers, limit switches) must be connected as voltage-free contacts. Contact Magnetic for advice before connecting command generators with open collector outputs.

Program 1 (Mode 1):
The barrier is controlled by a single switch.

Contact closed = closes barrier
Contact open = opens barrier
Connections:
Potential-free contact between +24V (terminals 26, 27, 33) and IN3 (terminal 30).
Fire service switches, emergency opening contacts, etc. can be connected to IN2. This opens the barrier and does not let it close again as long as the command is applied.
The command has priority over the close command. Induction control loop A can be connected as a safety loop.
Additional safety devices can be connected to IN5.
The safety devices must act as normal closed (break) contacts.
See Fig. S0226.

Program 2 (Mode 2):
The barrier is controlled by two push buttons.

A short pulse is sufficient to open the barrier. To close it, the button must be pressed until the barrier is closed.
Connections:
Open: contact between +24V (terminal 26, 27 and 33) and IN1 (terminal 28).
Close: contact between +24V and IN3 (terminal 30) or Magnetic operating panel at terminals 33 to 38

Fire service switches, emergency opening contacts, etc. can be connected to IN2. This opens the barrier and does not let it close again as long as the command is applied.
The command has priority over the close command. Induction control loop A can be connected as a safety loop.
Additional safety devices can be connected to IN5.
The safety devices must act as normal closed (break) contacts.

Program 3 (Mode 3):
The barrier is opened and closed by a single command generator (train of pulses).
1st pulse: barrier opens, 2nd pulse: barrier closes, 3rd pulse: barrier opens, ... etc.
Connections:
Pulse contact between +24V (terminal 26, 27 and 33) and IN1 (terminal 28) or Magnetic operating panel.

Fire service switches, emergency opening contacts, etc. can be connected to IN2. This opens the barrier and does not let it close again as long as the command is applied.
The command has priority over the close command. Induction control loop A can be connected as a safety loop.
Additional safety devices can be connected to IN5.
The safety devices must act as normal closed (break) contacts.
See Fig. S0226.

Program 4 (Mode 4):
The barrier is opened and closed by two separate command generators (pulsed).

Open: contact between +24V (terminal 26, 27 and 33) and IN1 (terminal 28).
Close: contact between +24V and IN3 (terminal 30) or Magnetic operating panel terminals 33 to 38.

Fire service switches, emergency opening contacts, etc. can be connected to IN2. This opens the barrier and does not let it close again as long as the command is applied.
The command has priority over the close command.
Induction control loop A can be connected as a safety loop.
Additional safety devices can be connected to IN5.
The safety devices must act as normal closed (break) contacts.
See Fig. S0226.

Program 5 (Mode 5) :
Automatic control. The barrier is opened either by an open pulse (IN1), an integrated opening loop or an external opening loop (IN4). The barrier closes automatically after a vehicle has completely passed the safety loop A and opening loop B or once the programmed barrier-open period has elapsed. If a vehicle does not pass after the opening pulse, the barrier closes after a programmable opening time has expired (programmed with 35 sec in the factory). Furthermore, the barrier can be closed by a close barrier command (IN3). This command has priority over the opening pulse (IN1) and the opening loop. Emergency opening signals such as a fire services switch are connected to the higher-level opening input terminal (IN2) and such signals have priority over the close barrier command.

Connections:
Opening pulse: contact between +24V (T 26, 27, 33) and IN1 (T 28)
Opening pulse, high-level: contact between +24V (T 26, 27, 33) and IN2 (T 29)
Close barrier command: contact between +24V (T 26, 27, 33) and IN3 (T 30)
Opening loop, external: contact between +24V (T 26, 27, 33) and IN4 (T 31)
Safety device, external: contact between +24V (T 26, 27, 33) and IN5 (T 32) and/or Magnetic operating panel at terminals 33-38.

Important note:
The signals from opening pulse generators (IN1/IN2) and external opening loop (IN4) must never be mixed up. There are fundamental differences in the way they work!
Additional safety devices can be connected to IN5.
The safety devices must act as normal closed (break) contacts.
See Fig. S0226.

Program 6 (Mode 6):
This program works in essentially the same way as Program 5. The difference is that in Program 5 the barrier closes automatically after a vehicle has completely passed over the safety and opening loops. In Program 6, the barrier closes immediately after the vehicle has crossed the safety loop. The opening loop has, at this time, no effect.

Program 7 (Mode 7):
This program works in essentially the same way as Program 5. The difference is that in Program 5 the barrier closes automatically after a vehicle has passed or after the pre-programmed barrier-open time has elapsed. In program 7 the barrier only closes if a vehicle has actually passed through.

Program 8 (Mode 8):
This program combines the differences between Program 6 and Program 5 and between Program 7 and Program 5 into a single program.

5.2 Operating the MLC controller

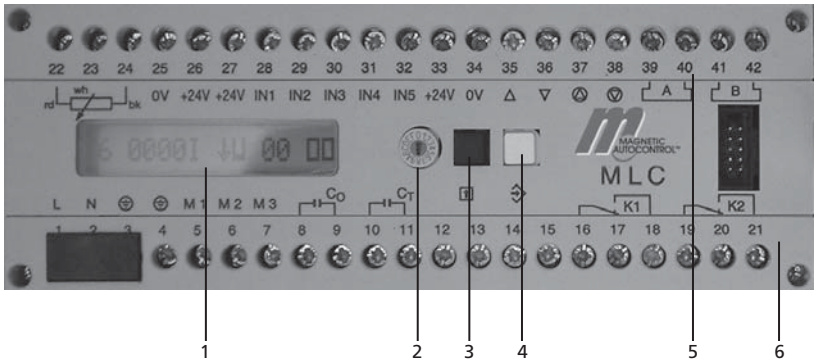
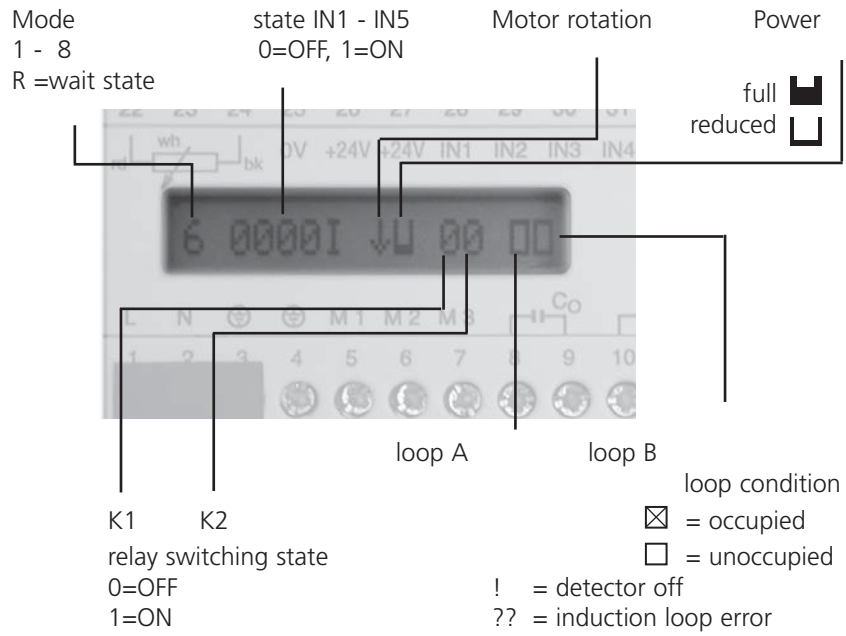


Abb.S0227
Operating elements on the front panel of the controller unit

1 liquid crystal display (LCD) for indicating operational and programmed data
2 rotary selector switch to select operating data
3 black button open/scroll (operating mode/programming mode)
4 white button close/enter (operating mode/programming mode)
5 terminal strip - input side
6 terminal strip - output side

5.3 Key to information displayed by the MLC

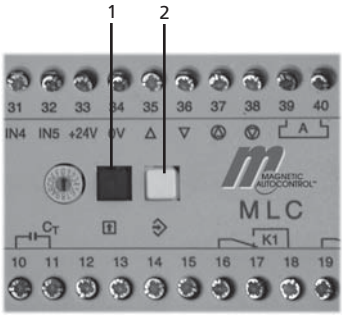
Normal operating mode, selector switch set to '0'. Following information is displayed:



5.4 Resetting the MLC

The controller distinguishes between three types of reset:

1. Cold start / detector alignment: Program restart including detector alignment procedure. This should be performed whenever work has been carried out on the barrier or the control unit.
Press the black (1) and white (2) buttons simultaneously for four seconds.

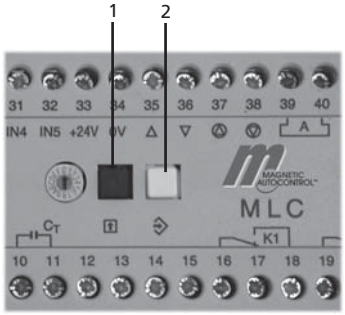


S0229

Abb.S0229
Operating elements

The cold start has the same effect as momentarily disconnecting the unit from the mains.
In this method the voltage must be switched off for at least 10 seconds. Otherwise the unit can be damaged.

2. Resetting the barrier to its initial position: Always after switching on the voltage if the barrier is not completely closed or after a cold start. The LCD flashes the message 'Reset expected' every few seconds.
Briefly press the black (1) and white (2) buttons simultaneously.
The barrier can also be placed in the initial position by applying a close command. However, the barrier only closes if the safety devices are free.



S0229

Abb.S0229
Operating elements

3. Resetting the controller to the factory settings by turning the rotary selector switch to position 'P'. For and press the black (1) and white (2) pushbuttons simultaneously. This restores all programmable operating data to pre-defined values set by the manufacturer.

Warning!
This last method of resetting the unit should only be chosen in exceptional circumstances as the controller must then be reprogrammed, a procedure which requires detailed knowledge.

5.5 Operating the barrier

The barrier is operated with the rotary selector switch set to position '0'. It is therefore essential that the selector switch is always returned to the '0' position before the barrier is used and after performing any modifications to the barrier's functions and programming.
If the selector switch is at position '0', the barrier can be operated directly via the buttons on the front panel of the MLC controller: pressing the black button opens the barrier, pressing the white button closes the barrier. The selector switch positions '1' - 'F' are for programming the controller and for reading function and operating data.

5.6 Programming and reading the operating data

All operating data is programmed in the same manner.

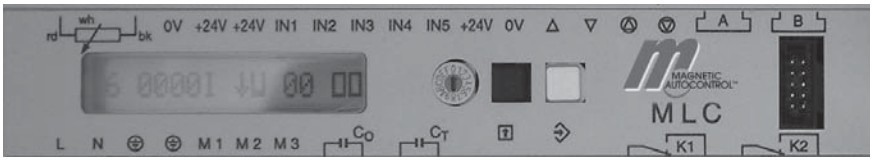


Abb.S0230

CAUTION!
The operating data contains safety relevant functions. It may therefore only be changed by qualified persons!

General operating data:

Position 0: normal operating mode	
Position 1: program number	1 - 8
Position 2: torque time	1 - 30 sec.
Position 3: barrier-open period	1 - 255 sec.
Position 4: Sensitivity of induction loop A	0 - 9 (0=min., 9=max.)
Position 5: Sensitivity of induction loop B	0 - 9 (0=min., 9=max.)
Position 6: detector mode A	0 - 8 (see table for function description)
Position 7: detector mode B	0 - 8 (see table for function description)
Position 8: frequency of induction loops A/B	10,000 Hz - 90,000 Hz
Position 9: spare	
Position A: Tally mode	
Position B: spare	
Position C: spare	
Position D: hardware error controller	hexadecimal error code
Position E: language	German, English, French, Spanish
Position F: factory settings	resets all operating data

Programming procedure:

1. Turn the rotary selector switch on the front panel of the MLC to the required position.
2. Press the black and white buttons simultaneously.
3. Using the black button scroll to the value required. (The cursor is positioned under the digit being altered).
4. Press the white button to store the chosen value or to move the cursor one space to the right.
5. Confirm the final value by pressing the black button or press the white button to cancel the value entered.

Note! After programming the unit, return the selector switch to position '0' (= normal operating mode).

Brief description of the program numbers (selector switch position '1'):

Program number	Function:
1	barrier controlled by a potential-free switch
2	dead man function
3	barrier controlled by pulses from a push button
4	barrier controlled by pulses from two separate push buttons
5	automatic with barrier-open timed period
6	automatic with barrier-open timed period, opening loop decoupled when vehicle passes from opposite direction
7	automatic without barrier-open timed period
8	automatic without barrier-open timed period, opening loop decoupled when vehicle passes from opposite direction

For a detailed description of the program No: See Chapter 5.1
Brief description of the general operating data (selector switch position 2 - F):

torque time: Pos 2	Period after which the torque motor switches to reduced power when the barrier boom is blocked.
barrier open period: Pos 3	Time, after which the barrier closes automatically if no vehicle has passed through.
sensitivity of induction loops Pos 4/5	Responsiveness of induction loops A = safety loops, B = opening / presence detection loop
detector mode: Pos 6/7	Function of the loop detectors A/B and the relays K1/K2. See Section 5.7: 'Adjusting the induction loops'-functions.
detector frequency Pos 8	See Section 5.8: 'Adjusting the induction loops'.
Traffic signal lead-in time Pos 9	Sets the lead-in time for the red signal (only for the traffic signal lead-in option)
Tally mode Pos A	Sets the car park occupancy counter (only for the difference counting option)
Hardware error Pos D	Hexadecimal error code, only relevant for manufacturer's own error detection procedures
Language Pos E	Language selection for LCD messages (German, English, French, Spanish)
factory settings Pos F	Resets the operating data to the original factory settings. Caution! Use only in exceptional circumstances!

Under certain circumstances, further programmable operating data may be enabled with special parameter sets. These are explained in detail in the description supplied with the parameter set.

5.7 Adjusting the parameters for the induction loops/ Function of the relays

Detector A

Mode	Internal function	Function K1
0*	inoperative*	pulse signal when barrier opens**
1	safety / closes barrier	pulse signal when barrier opens**
2	safety / closes barrier	active when loop A occupied
3	safety / closes barrier	pulse signal when vehicle enters loop A
4	safety / closes barrier	pulse signal when vehicle exits loop A
5-8	safety / closes barrier	directionally dependent Signal depending on the direction of travel of the vehicle Loop B - A
9*	inoperative	active when loop A occupied

* In detector A, mode 0, no safety function is available. In this case the external safety device (connection +24V-IN5) performs the safety function and closes the barrier.

**With special parameter sets relay K1 can be assigned a special function in Mode 0 and Mode 1. This function is described in greater detail in the description provided with the parameter set. In Mode 2 - 9 the special function is disabled.

Detector B

Mode	Internal function	Function K2
0*	inoperative*	acknowledge signal: barrier closed**
1	opens barrier (when selected***)	acknowledge signal: barrier closed**
2	opens barrier (when selected***)	active when loop B occupied
3	opens barrier (when selected***)	pulse signal when vehicle enters loop B
4	opens barrier (when selected***)	pulse signal when vehicle enters loop B
5-8	opens barrier (when selected***)	directionally dependent Signal depends on the direction of travel of the vehicle loop A - B

** With special parameter sets relay K2 can be assigned a special function in Mode 0 and Mode 1. This function is described in greater detail in the description provided with the parameter set. In Mode 2 - 8 the special function is disabled.

*** After detector B has been set, choose whether the loop is to act as an opening loop or as a presence loop.
In program versions with parking space counting it is also necessary to select whether the loop is arranged as an exit or entry loop.

5.8 Adjusting and checking the induction control loop working frequency.

Before starting up the system the working frequency of the loops must be chekked.
Do this as follows:

1. Turn the rotary switch on the front panel of the control unit to Position 8.
The current switched condition and frequency of detector A is displayed.

Detector switched condition, frequency in Hz

Display: Frequ. A 0 20253

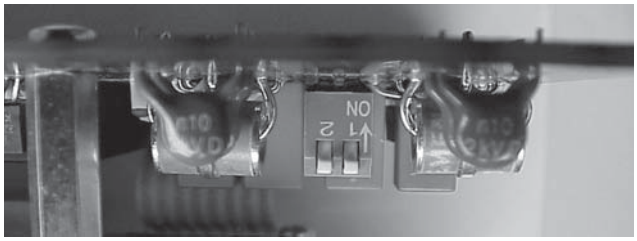
2. The white button can be used to switch backwards and forwards between the display for detector A and detector B.

a) The working frequency of the loops must be between 20 000 and 50 000 Hz

b)When the induction control loop is driven over by a vehicle there must be a clear, measurable increase in frequency. A rule of thumb is: The frequency increase must be at least 1/1000 of the previously read frequency. A higher rise differnce in frequency, means a higher the operating safety of the loop.

IMPORTANT!
c) As the induction control loops of the MLC work alternately, the two loops of a unit can never influence each other.
However, to prevent faults due to frequency coupling of external loop detectors or other MLCs in the immediate surroundings, a frequency distance of at least 5 kHz must be maintained from these external loop detectors/MLCs. To this end the frequencies of the induction control loops can be laid inside another part of the unit with a double pole DIP switch. The DIP switch is located on the right-hand side below the terminal strip with terminal numbers 22 - 42.

Switch ON = low frequency, Switch OFF = high frequency
Switch 1 = Loop A Switch 2 = Loop B.



The mains plug must be disconnected before removing the terminal strip. The frequency can be changed separately for both loops.
After switching over the frequencies must be re-checked.

6. Extended Programming

CAUTION! This section describes particularly complex and safety relevant functions. They may only be changed by qualified persons.

To access the extended operating data, the black button must be pressed whilst the rotary selector switch is turned to the required position.

Position '0' whilst pressing black button	adjusting sensor
Position '1' whilst pressing black button	adjusting the safety angle
Position '2' whilst pressing black button	reading the time meter
Position '3' whilst pressing black button	reading the operating cycle counter
Position '4' whilst pressing black button	reading the brake settings
Position 'C' whilst pressing black button	reset options
Position 'D' whilst pressing black button	test mode
Position 'E' whilst pressing black button	Direct motor control

For a brief description of the extended operating data (black button + turn selector switch)

Pos.0 Adjusting the angle sensor	Configuring the controller for the barrier type used, optimizing barrier movements (see appendix).
Pos.1 Safety angle	If the boom arm angle lies below a preset safety angle, the safety loop and other external safety devices become inactive (see appendix).
Pos.2 Time meter	Counts the number of operating hours (see appendix).
Pos.3 Operating cycle counter	Counts the number of times the barrier is opened see appendix).
Pos.4 Reading the brake settings	Relevant, if balancing the braking is not possible.
Pos B correct brake position	Possibly in barriers with support posts or special barrier arms. See Chapter 6.6
Pos C Reset behaviour	Start up performance after switching on the voltage See Chapter 6.7
Pos.D Test mode	In test mode 9, the barrier automatically opens and closes repeatedly (for endurance testing)
Pos.E Direct motor control	Help mode for rotating drive shaft (see appendix)

6.1 Adjusting the safety angle sensor / optimizing barrier movements

The position of the barrier boom arm is continuously detected by a sensor. This replaces limit switches that are used in conventional barrier control systems. The combination of the sensor and the MLC unit guarantees the best possible control of the barrier boom movement.

Readjustments are necessary after any mechanical alteration to the barrier or if either the MLC controller or the sensor is replaced.

1. Move the barrier into its open position.
2. Turn the rotary selector switch on the front panel of the control unit to position '1'.
3. Press and hold down the black button. Whilst the button is pressed down, return the selector switch to position '0'. The display now shows the sensor value for the open position

Exemple Display :

Sensor 0560

The value shown for the open barrier must lie between 555 and 565. If the value does not lie within these limits, the program aborts the alignment routine. In this case, the sensor may need to be mechanically readjusted.

Readjusting the sensor:
Please note that the movement of the barrier can cause personal injury. Ensure that the barrier is not able to move from its open position.

The sensor is located on the barrier mechanism on the rear side of the transmission shaft.
To readjust the sensor you will need a 2,5 mm hexagon socket screw key.
1. Move the barrier into its open position.
2. Remove the barrier's top cover.
3. Loosen the hex. socket head screw that fastens the sensor shaft into its locating hole and pull the sensor out.
4. Rotate the sensor shaft until you can read a value of 560 on the display of the MLC controller unit. Remount the sensor such that the plastic supports lie on the metal surface.
5. Push the sensor shaft into its locating hole until about 1 mm of the shaft remains visible. Refasten the shaft by tightening the hex. socket head screw.
6. Once the open barrier produces a value of around 560 on the display, press the black and white buttons simultaneously. The display indicates the various barrier types and the mains frequencies:

Display (example):

* MIB 20 50HZ *

Using the black button you can scroll through the barrier types and frequencies until the correct type and mains frequency is displayed.

Display (example):

* MIB 30 50HZ *

Note! The barrier type and mains frequency selected must agree with the details printed on the barrier's type plate. The type plate is located on the outside of the controller's mounting plate.

7. Confirm your selection by pressing the white button. The following prompt appears on the display:

Display (example):

Close ?

8. By pressing the two buttons simultaneously, the motor is switched so that the barrier closes. The value registered by the sensor when the barrier arm is at its lower end position is stored as the lower reference value. This value appears on the right of the display and must lie at approx. 115.

Display (example:

Please wait	115

After a few seconds the display then reads

Display (example):

Open barrier	?

9. Pushing the two buttons again simultaneously now drives the boom under reduced power into its upper end position. The value registered by the sensor with the boom in its upper end position is stored as the upper reference value. This value should be around 560. If a value of about 560 is not achieved, the program aborts the alignment routine.

Example:
Display (example):

Please wait	560

After a few seconds the display then reads.

Display (Example):

Alignment	OK

The next stage involves the self-optimization of the barrier arm movement. During this procedure the barrier arm is driven up and down a total of thirty times. During this test a stepwise convergence procedure is used to determine the correct time at which to brake the motor when the boom is near its end positions. Once this optimization procedure has been initiated it should be allowed to continue through to completion without interruption. If interrupted, the optimization procedure must be restarted.

The barrier must be able to move freely during this time.

If you simultaneously press both buttons after receiving the message "Balance OK" the display is as follows:

Display:

Close barrier	?

Simultaneously press both buttons again. The barrier then moves up and down until the optimum movement sequence has been determined. During this time the display is as follows:

Display:

Please wait	000

As long as the number 000 is displayed on the right the braking starts too early and the barrier does not reach the end position. The braking is now gradually reduced. After several movements the number is replaced by other values. These provide information about the final speed of the preceding movement. If the optimisation is still not completed after 50 movements the process must be cancelled. The cause of this can be, e.g. due to the mechanical setting of the barrier. If so, this must be corrected. The process must then be restarted from the beginning

If the optimisation has been successfully completed the display shows the following Display:

Display:

Braking	OK

The rotary selector switch should then be turned momentarily to position '1' and then back to position '0'. Whilst the selector switch is being moved, neither of the buttons must be pressed.

The barrier is now ready to be operated

6.2 Adjusting the angle for the safety / safety devices

In order to prevent unauthorized opening of the barrier e.g. by activating the safety device, the barrier's safety devices are deactivated when the angle of the barrier boom falls below a certain defined angle. This threshold angle can be set in steps of 5°. The 'closed' position corresponds to an angle of 0°, the 'open' position an angle of 90°.
Angle adjustment range: 10° - 80°.

1. Press the black button on the front panel. Whilst holding the button down turn the selector switch to position '1'.

Display (example): | Angle monitor 30 |

2. Press the black and white buttons simultaneously. The cursor now appears under the tens column of the angle.

Display (example): | Angle monitor 30 |

3. Pressing the black button allows you to alter the angle to the required value in steps of 5

Display (example): | Angle monitor 45 |

4. Exit the set-up routine by pressing the white button.

Display (eample): | Save Y=II N= =>? |

5. Confirm by pressing the black button, or press the white button to cancel.

Display (example): | Angle monitor 45 |

Note! Once all adjustments have been completed, return the selector switch to position '0'.

6.3 Reading the time meter

The controller unit is equipped with a non-resettable time meter. The meter records the time during which power is connected to the unit. To read the time meter proceed as follows:

Press the black button on the front panel. Whilst holding the button down turn the selector switch to position '2'.

Display (example): | Op. hours 01620.6 |

6.4 Reading the operating cycle counter

This counter registers each time the barrier is opened. The counter reading is useful for assessing the degree of wear on certain machine components.
Note: the counter is only updated after every tenth barrier opening.

To read the operating cycle counter proceed as follows:

Press the black button on the front panel. Whilst holding the button down turn the selector switch to position '3'.

Display (example):

Cyles	08220

6.5 Reading the brake settings

For each barrier, the boom angle at which the brake is applied is determined during the self-optimization procedure. These brake settings can differ for the raising and lowering motions of the boom and depend upon such factors as: the barrier type, the length of the barrier boom, the weight of the barrier boom, spring tension settings, etc.
The brake settings for each barrier type must lie within certain limits specified in the following table.

Type	Braking angle 'arm opening'	Braking angle 'arm closing'
MIB20 50Hz	100 - 220	80 - 170
MIB20 60Hz	50 - 180	70 - 170
MIB30 50Hz	40 - 240	60 - 280
MIB30 60Hz	80 - 290	90 - 280
MIB40 50Hz	40 - 150	60 - 180
MIB40 60Hz	70 - 150	50 - 200

To read the brake settings, proceed as follows:

Press the black button on the front panel. Whilst holding the button down turn the selector switch to position '4'.

Display (example):

arm open	arm closed
⬆ 079	⬇ 085

Note!
Once all adjustments have been completed, return the selector switch to position '0' = normal operating mode.

6.6 Correcting the braking position

Significance:
If the spring settings deviate from the standard, special barrier arms are used or under special ambient conditions, the automatic correction of the braking

may have a negative effect. Here it is possible,
a) to retain automatic correction and to move the setpoint values for the braking in the end position down or up. (Service + n, Service - n)

b) To completely switch off automatic correction in the bottom end position.
(Particularly important for barriers with support posts!)
In this case a fixed value must be programmed for the braking.

1.Keep the black button pressed while turning the rotary switch. In the front panel in position"B"

Example:
Display: Brake optimizer: 1

2. Press the black and white buttons simultaneously.
The cursor now appears below the number

Display: Brake optimizer: 1

3. By pressing the black button you can now choose between the brake optimization setting switched on (1) or switched off (0).

Example: Brake optimization ON

Display: Brake optimizer: 1

4. Acknowledge with the white button.

Display: Service : + 0

5. This value is normally only changed in special cases. If you want to change the setpoint value, briefly press both buttons together. You can then change the value between + 5 and - 5 in the usual way. Positive values increase the braking effect; negative values reduce the braking effect.

Example: Brake optimization OFF

Display: Brake optimizer: 0

4. Acknowledge with the white button.

Display: BP- lock: 150

5. If you want to change the setting, briefly press both buttons together. You can then change the value in the usual way. If the value is increased the braking effect increases and if the value is reduced the braking effect reduces. The optimum value must be determined by trial and error. The value for the end position set in this way is no longer automatically corrected. The braking must therefore be checked from time to time and corrected if necessary.
Important! After completing the adjustments, turn the rotary switch back to position 0.

6.7 Specifying reset behaviour

The control system can be programmed to respond in different ways after loss of voltage.
The factory setting is 'signal reset'. This setting should not be altered without good reason. If necessary, please contact Magnetic for advice.

Barrier behaviour under '**signal reset**':
If the barrier is in its closed position when the voltage is applied, the controller unit assumes control of the barrier as soon as the start-up routine has been completed. The controller responds to all the connected command generators.
If the barrier is not in its closed position when the voltage is applied, the barrier opens and remains open. The controller is then in its wait state. The first position in the display is occupied by an 'R', and the text 'Waiting for reset' appears intermittently.
A reset can be initiated in a number of different ways:
1. By briefly pressing the black and white buttons simultaneously on the front panel of the MLC.
2. By applying a close barrier command
3. By a vehicle crossing the safety loop.
4. If no safety loop is present, by a vehicle passing the light barrier.

Barrier behaviour under 'auto reset':
In this case, the controller is immediately ready for operation no matter what position the barrier was in as the voltage was applied. The controller unit responds to all connected command generators. If no control command is registered, the barrier closes.

1. Keep the black button pressed down whilst turning the rotary selector switch on the front panel to position 'C'.

Display (example):

Signal Reset

2. Press the black and white buttons simultaneously. The cursor appears on the right hand side.

Display (example):

Signal Reset

3. Pressing the black button now allows you to toggle between 'Signal reset and 'Auto reset'

Display (example):

Auto Reset

4. Press the white button to display the prompt:

Display (example):

Save Y=ll N= =>?

5. Confirm your selection by pressing the black button, or press the white button to cancel.

Display (example):

Auto Reset

6. **Note!** Once all adjustments have been completed, return the selector switch to position '0'.

6.8 Test mode

In this mode, the control system enables an endurance test to be performed on the barrier without the need for an external clock generator. The endurance test involves the continual opening and closing of the barrier.

1. Keep the black button pressed down whilst turning the rotary selector switch on the front panel to position 'C'.

Display (example):

Test Modus 5

2. Press the black and white buttons simultaneously. The cursor appears on the right hand side

Display (example):

Test Modus 9

3. Release the buttons and return the rotary selector switch to position '0'. The barrier now begins to open and close repeatedly. The display now reads:

Display (example):

9 00001 .....

To exit test mode, turn the rotary selector switch to position '1' and then back to position '0'. The controller will then resume operating in mode that was set before entering test mode.

6.9 Direct motor control

For a number of adjustments performed on the barrier (e.g. adjusting the sensor), it is possible to use the touch-control mode to briefly activate the barrier's drive motor. The direction of rotation and the output of the motor can be selected with the black button on the front panel of the MLC. Pressing the white button activates the drive. The drive remains active for as long as the white button is held down. This allows the barrier to be driven into any required position. The direction of rotation and the motor output level selected are represented on the display by the following symbols:

The direction of rotation and the motor output level selected are represented on the display by the following symbols:

reduced power, downwards

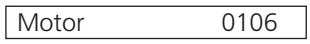
full power, upwards

full power, downwards

reduced power, upwards

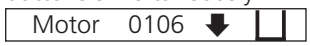
1.Keep the black button pressed down whilst turning the rotary selector switch on the front panel to position 'E'.

.



Display (example):

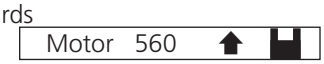
2. Press the black and white buttons simultaneously.



Display (example):

3. Use the black button to select the required direction of rotation and motor output level

Example: full power, upwards



Display (example):

4. Pressing the white button then drives the barrier up at full power.

5. To exit sensor adjustment mode, return the rotary selector switch to position '0'.

6. To quit Direct Motor Control mode again, turn the rotary switch back to position 0.

7. Initial operation

7.1 Commissioning procedure

Once the barrier has been installed, the boom arm attached and all electrical wiring work including the installation of induction loops has been completed according to the instructions, the barrier can be put into operation.
To avoid the risk of injury and damage arising from any unintentional barrier movements during initial operations, all persons and objects should be kept clear of the barrier zone.

1. Disconnect the power supply plug inside the barrier housing.
2. Move the barrier arm manually to the vertical position.
3. Turn the rotary selector switch on the front panel of the MLC controller to position '0'.
4. Connect the supply leads to the terminals L1, N and PE in the switch box (situated at the lower left in the barrier housing) and test the supply voltage. The mains voltage must agree with that printed on the type plate.
5. Insert the plug into the earthed socket provided in the distribution board.
6. Observe the display during the start-up routine. See Section 7.2 'Messages displayed during the start-up routine'.
7. Return the barrier arm to its initial position by pressing the black and white buttons simultaneously (reset).
8. Check the settings that have been programmed and correct them if necessary. See Section 6.4 'Programming and reading the operating data'.

7.2 Messages displayed during the start-up routine

The liquid crystal display on the MLC controller displays the following messages after switching on the power and during the start-up routine.

Start:

1. Display | *** MAGNETIC ***

Hardware and software version number:

2. Display (example) | Hard A, Boot 0002

MLC type and Parameter ID number:

3 . Display (example): | MLC10-100 S20000

MLC software and parameter version numbers:

4. Display (example): | 4096.0002 00

Barrier type setting:

5. Display (example):

MIB 40	50 Hz

WARNING!
The barrier type and the mains frequency shown on the display must agree with the information printed on the barrier's type plate, otherwise the settings must be corrected. (See appendix 'Adjusting the angle sensor').

The start-up routine ends once the five messages above have been displayed. The display then switches over to the operational mode. The LCD switches between:

Display:

8 10000 ↑ ▬ 00 ⊠ □

and

Reset expected

The barrier can now be returned to its initial position (reset) by briefly pushing the black and white buttons simultaneously.

The barrier is then ready for use.

8. Technical data

8.1 MAGSTOP barrier	MIB 20	MIB 30	MIB 40
Maximum boom length	2500 mm	3500 mm	6000mm
Opening/closing time	0, 9 sec	1,4 sec	4,0 sec
Power supply	230 V AC, 50/60 Hz	230 V AC, 50/60 Hz	230 V AA, 50/60 Hz
Power consumption	max. 240 W	120 W	120 W
Housing	zinc-plated sheet steel colour RAL 2000	dto.	dto.
Housing dimensions	350 x 350 x 1010 mm (W x D x H)	dto.	dto.
Foundation base frame	stainless steel	stainless steel	stainless steel
Weight (without boom)	50 kg	50 kg	50 kg
Operating temp. range	-20°C bis +50°C	dto.	dto.
Drive	torque motor	torque motor	torque motor

8.1 Controller units		MLC10	MLC11*
Voltage (+/- 10%)	volt	100 - 240	100 - 240
Frequency	hertz	50 - 60	50 - 60
Max. power consumption	watt	20	20
Fuse		F4AH	F6.3 AH
Control voltage		24V DC/max. 300 mA	
No. of input channels		5	5
No. of open collector outp.	max. 50 mA/24V DC	2	2
No of zero-potencial changeover relays	max. 250 V AV/3 A	2	2
No of characters in display		16	16
Choice of languages		D-GB-F-E	D-GB-F-E
Max.no.of loop detectors		2	2
Induction range	µH	70 - 500	70 - 500
No of sensitivity settings		10	10
Selectable responsiveness	%	0,01 -2	0,01 - 2
Operating temp. range	° C	0 - 55	0 - 55
Protection system	IP	20	20
Weigth	gram	950	1050
Dimensions	mm(L x W x H)	200 x 75 x 118	200 x 75 x 118

* The MIB 20 barrier may only be used in conjunction with the MLC 11 (external heat sink)

9. Technical support

If operational faults arise which cannot be dealt with by your technical staff, please contact our authorized customer service agents or specialist suppliers for assistance.

When contacting our technical support service please have available the barrier type, serial number, version, etc. which you will find printed on the type plate on the barrier housing.

10. Spare parts and accessories

The spare parts and accessories for your barrier system are listed in our separate spare parts and accessories catalogue which is available from Magnetic or from one of our authorized distributors.

11. Maintenance and service

The MIB barrier gates are designed for a long lifetime with only a minimum of maintenance required.
The motor itself is maintenance free.
To guarantee the greatest available equipment uptime and maximize the lifetime of the barriers please follow the prescribed maintenance schedules.

If it becomes necessary to exchange parts, you must use original spare parts from Magnetic.

You must obey the safety requirements when working on the barrier.

A) Check the spring adjustments and arm position.	Every 12 months
B) Check the rubber end stops and exchange them if necessary.	Every 12 months
C) Inspect the housing inside and batch up paint damages.	Every 12 months
D) Inspect the barrier arm for physical damage and check if the barrier arm attachment kit is used properly and all parts are in place and tight.	Every 12 months
E) Inspect for proper attachment of all safety related signage such as Gate Cabinet and barrier arm safety sticker.	Every 12 months
F) Check barrier operation.	Every 12 months
G) Inspect and test all safety devices such as light beams and inductive loops.	Every 12 months
H) Inspect and test the limit switch and cam position.	Every 12 months

If the barrier is not used for a long period of time after installation move it to the up position and remove the gate arm. If at all possible leave the power on and maintain the up command on IN1. This will provide the maximum protection against corrosion.
Make sure to test all safety devices when reinitiating the barrier operation.

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